



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Robert C. Lam et al.

Serial No: 10/678,599

Filed: October 3, 2003

For: HIGH PERFORMANCE, DURABLE, DEPOSIT FRICTION MATERIAL

Exr. Jennifer A. Steele

Art Unit: 1771

Confirmation No.: 6145

Mail Stop Amendment

Commissioner of Patents

P.O. Box 1450

Alexandria, VA 22313-1450

March 28, 2008

APPELLANTS' BRIEF ON APPEAL

Sir:

This brief on appeal is being filed in accordance with 37 CFR §1.192 by Appellants in the matter of the above-identified patent application.

REAL PARTY IN INTEREST

The real party in interest is BorgWarner, Inc., 3840 Hamlin Road, Auburn Hills, MI 48326, the assignee of the present application.

03/31/2008 HDESTA1 00000070 150825 10678599

02 FC:1402 10.00 DA 500.00 OP

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affect or be directly affected by having a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

This appeal is based on the final rejection of claims 1, 2, 4 and 6-19. Claims 3 and 5 are canceled and claim 20 withdrawn. Only claims 1, 2, 4 and 6-19 are pending in the application.

STATUS OF AMENDMENTS

A Response was not filed to the Final Rejection. Only claims 1, 2, 4 and 6-19 remain in the application. No amendments have been filed subsequent to the appealed final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Only claim 1 is an independent claim.

Claim 1 recites a friction material comprising a fibrous base material (page 9, line 18) impregnated with at least one curable resin (page 7, lines 2-3 and page 15, lines 6-17). The fibrous base material comprising a high fiber content porous primary layer (page 7, lines 3-4) and a secondary layer comprising a mixture of

carbon and silica friction modifying particles on at least one surface of the primary layer (page 7, lines 4-5 and page 7, lines 11-12). A secondary layer comprises about 20% to about 35% by weight of silica particles (page 6, lines 29-32) and about 65% to about 80% carbon particles (page 6, lines 29-32), based on the total weight of the friction modifying particles (page 6, lines 29-32).

GROUND'S OF REJECTION TO BE REVIEWED ON APPEAL

(A). Whether claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. §103(a) over EP 1,203,897

(B). Whether claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. §103(a) over U.S. Patent No. 5,998,307 in view of EP 1,203,897.

(C). Whether claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. §103(a) over U.S. Patent No. 6,630,416 as applied under 35 U.S.C. §102(f).

ARGUMENT

I. SUMMARY

(A). Claims 1, 2, 4 and 6-19 patentably distinguish over the EP 1,203,897 reference in the recitation of a secondary layer comprising a mixture of carbon and silica friction modifying particles on at least one surface of the primary layer wherein the secondary layer comprises about 20% to about 35%, by weight, of silica particles, and about 65% to about 80% carbon particles, based on the total

weight of the friction modifying particles.

The Examiner states that the EP '897 reference discloses a friction material comprising a fibrous base material impregnated with a curable resin, a fibrous base material comprising a porous primary layer and a secondary layer. The Examiner also asserts that the secondary layer of the '897 EP reference comprises friction modifying particles comprising silica. The Examiner acknowledges that the EP '897 patent does not teach that the secondary layer comprises a mixture of about 20% to about 35% silica particles and about 65% to about 80% carbon particles as set forth in the claims on Appeal. The Examiner takes the position that the EP '897 reference, in claim 5 and in the specification, page 7, lines 11-17, teaches the various friction modifying particles that are useful as the secondary layer on the fibrous base material includes silica and carbon. However, the Examiner also acknowledges that the EP '897 reference does not teach the specific composition of the friction particles in the secondary layer defined by the claims on Appeal. In view of the acknowledged deficiencies of the EP '897 reference, the Examiner takes the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a mixture of friction modifying particles of silica and carbon in the percentages specified in the claims on Appeal. The Examiner also states that it would have been obvious to have selected the appropriate amounts of the two particles through the process of routine experimentation to obtain optimum friction properties.

The Appellant respectfully submits that the Examiner's obviousness position merely attempts to add to the reference what the Examiner has admitted is not taught by the reference. Appellant also respectfully submits that assumptions about knowledge in the art to combine specific ratios of friction modifying particles and that these specific ratios of particles could be determined through a process of routine experimentation can not substitute for the literal disclosure of the reference.

The key elements of the invention defined by the claims on Appeal must be found in the prior art or there must be a clear suggestion to modify the teachings of the reference to utilize the limitations defined in the claims on Appeal. The Examiner cannot rely upon the disclosure in the Applicant's patent application on the benefits of the specific combination of friction modifying particles defined in the claims on Appeal to establish the benefits of such a combination. Of utmost importance is the actual disclosure of the reference and not conclusory assertions set forth by the Examiner. Assumption about knowledge in the art cannot substitute for the literal disclosure contained in the reference supplied by the Examiner. The Examiner has acknowledged that the EP '897 reference does not teach the specific combination for the secondary layer of the friction material and there is no disclosure or suggestion in this reference that would lead one skilled in the art to the specific combination contained in the claims on Appeal.

(B). Claims 1, 2, 4 and 6-19 patentably distinguish over U.S. 5,998,307 in view of the EP 1,203,897 reference in the recitation that the secondary layer of the

friction material comprises friction modifying particles of silica and carbon and that such secondary layer comprises a mixture of about 20% to about 35% of silica particles and about 65% to about 80% of carbon particles based on the total weight of the friction modifying particles.

The Examiner states that the '307 patent teaches a friction material comprising a fibrous base material impregnated with a curable resin, a fibrous base material comprising a porous primary layer and a secondary layer. The Examiner also asserts that this reference teaches a secondary layer comprising friction modifying particles comprising carbon particles. The Examiner acknowledges that the '307 patent differs from the invention defined by the claims on Appeal as this reference does not teach that the secondary layer comprises a mixture of about 20% to about 35% silica particles and from about 65% to about 80% carbon particles. The Examiner then states that the EP '897 reference teaches a secondary layer comprising friction modifying particles comprising silica.

It is the Examiner's position that it would be obvious at the time the invention was made to employ a mixture of silica and carbon as the '307 reference teaches carbon as a friction modifying particles (column 3, lines 40-44) and the '897 EP reference teaches silica as a friction modifying particle. It is the Examiner's position that one of ordinary skill in the art would have been motivated to employ a mixture of silica and carbon friction modifying particles as the references relied upon by the Examiner disclose that such friction modifying particles can be used separately in a friction material. The Examiner further takes the position that it

would be obvious to select the specific ratios of the silica and carbon friction modifying particles through a process of routine experimentation.

Appellant respectfully submits that the Examiner's obviousness position merely attempts to add to the references what is not disclosed or suggested by the references. Appellant also respectfully submits that assumptions about knowledge in the art and statements about routine experimentation cannot be substituted for the literal disclosure of the references.

The key elements of the invention recited in the claims on Appeal must be found in the prior art or there must be a clear suggestion for the limitations contained in the claims on Appeal. The Examiner cannot rely upon the disclosure in the Appellant's patent application for establishing the benefits of the combination of elements recited in the claims on Appeal. The rejection, to be proper, must be based upon facts and not conclusory assertions. Assumptions about the knowledge in the art cannot be substituted for the literal disclosure of the references. In this case the Examiner has acknowledged the deficiency of the references and there is nothing in the references that would suggest the invention defined by the claims on Appeal.

(C). Claims 1, 2, 4 and 6-19 patentably distinguish over U.S. Patent No. 6,630,416 in the recitation of a secondary layer comprising a mixture of carbon and silica friction modifying particles on at least one surface of the primary layer where the secondary comprises about 20% to about 35% silica particles and about 65% to about 80% carbon particles based on the total weight of the friction

modifying particles as set forth in the claims on Appeal.

The '416 patent is the priority application upon which the '897 EP patent is based. Accordingly, the teaching of these two references are essentially identical and the deficiencies previously pointed out with respect to the '897 EP patent apply equally to the '416 patent. For the sake of brevity the deficiencies of the '416 patent will not be repeated as this was adequately dealt with in the comments with regard to the '897 EP patent. In addition, the Appellant's would like to point out that a Terminal Disclaimer was filed with regard to the '416 patent and that the Examiner has withdrawn a previously asserted double patenting rejection based on this reference.

II. DETAILED ARGUMENT

(A). Claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. § 103 (a) over the EP '897 reference.

Claims 1, 2, 4 and 6-19 are patentably distinct over the EP '897 reference and the recitation of a secondary layer comprising a mixture of carbon and silica friction modifying particles on at least one surface of the primary layer wherein the secondary layer comprises about 20% to about 35% of silica particles, and about 65% to about 80% carbon particles, based on the total weight of the friction modifying particles as set forth in the claims on Appeal.

The '897 EP patent teaches a friction material having a fibrous base material comprising a porous primary layer and a secondary layer. The secondary layer comprises friction modifying particles comprising silica. The '897 EP patent

does not teach or suggest that the secondary layer can comprise a mixture of silica and carbon friction modifying particles in the specific range set forth in the claims on Appeal. The Examiner in the Final Rejection acknowledges this deficiency of the '897 EP patent. The Examiner attempts to provide the deficiencies of the '897 EP patent by asserting that Applicant's claims would have been obvious in view of the teaching of the '897 EP patent. Further, the Examiner states that it would have been obvious to select the specific ranges of the two friction modifying particles recited in the claims through the process of routine experimentation. However, nowhere in the '897 EP patent is there a suggestion that the secondary layer utilize the silica and carbon friction modifying particles in the ranges specified.

The '897 EP patent is owned by the same assignee as the assignee for this patent application. The inventors on the EP reference include two of the inventors listed on the instant patent application along with an additional inventor employed by the assignee. The '897 EP patent is also the European equivalent of the Lam '416 patent relied upon by the Examiner in a later portion of the Final Rejection. In response to a non-statutory obviousness-type double patenting rejection previously presented in the prosecution of this patent application a Terminal Disclaimer was filed and accepted for the '416 patent.

In the specification of this patent application it was clearly stated that considerable research was necessary to maximize the friction material to obtain the desired properties. The performance characteristics required for a friction material are constantly changing and the friction material developed for one

application will not be consistent with the performance properties required for other applications for a friction material. The specific limitations in the claims concerning the friction modifying particles is not taught or suggested by the '897 EP reference relied upon by the Examiner. To just state that the specific limitations recited in the claims is obvious and that these limitations could be selected through the process of routine experimentation is not proper without at least some support in the applied reference. Such a position by the Examiner does not meet the "common sense" test set forth in the Teleflex decision, KSR INT'L Co.v.Teleflex Inc., 127S.Ct.1727, 1734; 82USPQ 2d 1385 (2007). In addition, this position by the Examiner does not satisfy the Federal Circuits "teaching, suggestion, motivation" test. Applying this test to the '987 EP reference does not result in this reference teaching what is specifically claimed on the claims on Appeal.

Of utmost importance is the reliance upon the facts and not conclusory assertions to establish obviousness. Assumptions about knowledge in the art cannot substitute for evidence of what is contained in the art. It remains necessary to identify the reason why a person of ordinary skill in the art would have developed the combination of elements in the manner set forth in the claims. Assumptions about knowledge in the art cannot be substituted for evidence of the actual teaching of the art. If the present invention was obvious to a person skilled in the art, the common inventors from the '897 EP patent would not have had needed to conduct extensive research to develop the present invention. It is the Appellant's position that the inventors on the instant patent application, that are

also common inventors on the '897 EP patent relied upon by the Examiner, define what would be the knowledge level of person skilled in the art. These inventors needed to conduct extensive research to develop the invention defined by the claims on Appeal. The Examiner conclusory statement on obviousness and routine experimentation cannot be substituted for evidence on what is specifically taught by the reference supplied by the Examiner.

The Appellant respectfully submits that the '897 reference does not teach a friction material having a secondary layer that comprises silica and carbon friction modifying particles in the ranges specified in the claims on Appeal. Nowhere does the '897 EP patent disclose or suggest this specific limitation for the secondary layer as defined by the claims on Appeal. The '897 EP patent is deficient and the deficiency of this reference has been acknowledged by the Examiner in the Final Rejection. It is the Appellant's position that the rejection fails to establish a *prima facie* cause of obviousness because the applied prior art does not teach or suggest the key elements of what is claimed. See In re Kahn, 441 F. 3d 977, 985-86; 78 USPQ 1329,1335 (fed). (Cir. 2006).

In addition, the rejection does not provide any evidentiary basis to support the findings asserted by the Examiner. See In re Ahlert, 424 F. 2d 1088, 1091; 165 USPQ 418, 420-21 (CCPA 1970).

Appellant respectfully submits that one cannot rely on hindsight in reaching an obviousness determination. It is essential that the decision maker forget what has been taught by the disclosure in the patent application under consideration.

The Examiner cannot use piece meal reconstruction that ignores the limitations in the claims to arrive at the claimed invention. See Bausch & Lomb, Inc. v Barnes-Hind/Hydrocurve, Inc. 796 F. 2d 443,448, 448-449; 240 USPQ 416, 420 (Fed. Cir.1986).

The rejection is clearly based on a conclusory assertions and assumptions not found in the prior art.

(B). Claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. § 103 (a) over the U.S. Patent No. 5,998,307 in view of EP 1,203,897.

Claims 1, 2, 4 and 6-19 are patentably distinct over the combination of references as these claims recite a friction material having a secondary layer comprising a mixture of carbon and silica friction modifying particles wherein the secondary layer comprises about 20% to about 35% silica particles, and about 65% to about 80% carbon particles.

The '307 patent teaches a friction material having a fibrous base material comprising a porous primary layer and a secondary layer. The secondary layer is comprised of carbon friction modifying particles. The '307 patent does not disclose or suggest a secondary layer having a mixture of carbon and silica friction modifying particles or the specific ranges for these components set forth in the claims on Appeal. The Examiner, in the Final Rejection acknowledges that the '307 patent does not teach a specific components for the secondary layer set forth in the claims on Appeal. Accordingly, the '307 patent has the same deficiencies as the previously discussed '897 EP patent.

It is the Examiner's position that it would have been obvious at the time of the invention to one ordinary skill in the art to employ a mixture of carbon friction modifying particles from the '307 patent with the silica friction modifying particles from the '897 EP patent. Further, the Examiner asserts that the specific amounts for the carbon and silica friction modifying particles could be obtained through the process of routine experimentation.

The '307 patent and the '897 EP patent do not disclose or suggest a friction material having a secondary layer with carbon and silica friction modifying particles in the specific ranges set forth in the claims on Appeal. The fact that the '307 patent only recites carbon friction modifying particles clearly teaches away from placing other types of friction modifying particles in the secondary layer of this friction material. Absent some suggestion in this reference to utilize different friction modifying particles and the specific ranges for such particles this rejection does not satisfy the "common sense" test of the Teleflex decision or the Federal Circuit's "teaching, suggest, motivation" test.

The '307 patent, the '897 EP patent and the patent application on Appeal are all owned by the same assignee. In addition, there are common inventors on both of the references relied upon by the Examiner and the patent application on Appeal. The two references and the current patent application show a continuous advancement in the friction field art and improvements that have been developed to satisfy various performance requirements for friction materials. There is no disclosure or suggestion in the '307 patent or the '897 EP patent to combine

carbon and silica friction modifying particles in the manners suggested by the Examiner. In addition, there is no disclosure or suggestion in either of the two references relied upon by the Examiner for the specific ranges of carbon and silica friction modifying particles as set forth in the claims on Appeal. It is important to rely upon facts and not conclusory assertions to establish obviousness. Assumptions about knowledge in the art cannot be substituted for evidence of what is actually taught by the reference. It remains necessary to identify the reason why a person ordinary skilled in the art would have combined the prior art elements in the manner set forth in the claims. Assumptions about knowledge in the art cannot be substituted for evidence for what is taught by the art. The fact that the '307 patent teaches a friction material that only utilizes carbon friction modifying particles in the secondary layer teaches away from utilizing other types of friction modifying particles in the secondary layer. In addition, there is clearly no suggestion in the '307 patent for the ranges of carbon and silica friction modifying particles set forth in the claims on Appeal. The '307 patent is deficient in that it does not disclose or suggest the combination of friction modifying particles for the secondary layer of a friction material as set forth in the claims on Appeal. The '897 EP patent does not supply the deficiencies of the '307 patent. That these deficiencies in the applied references are present is acknowledged by the Examiner in the Final Rejection. The Final Rejection maintained the rejections contained in the prior rejection where the Examiner commented with regard to specific dependent claims that depend either directly or indirectly from claim 1.

However, it is the Appellant's position that the entire invention defined by these dependent claims is not shown in the references relied upon by the Examiner. In fact, the Examiner has acknowledged that neither the '307 patent or the '897 EP patent teach the specific mixture of silica and carbon friction particles set forth in the Appellant's claims on appeal. Accordingly, it is the Appellant's position that the specific dependent claims mentioned by the Examiner define an invention that is not disclosed or suggested by the '307 patent or '897 EP patent.

It is the Appellant's position that the rejection fails to establish a *prima facie* case of obviousness because the applied prior art does not teach or suggest the keys elements of what is claimed in the claims on Appeal. See In re Kahn, 441 F. 3d 977, 985-86; 78 USPQ 1329,1335 (Fed. Cir. 2006). The rejection does not provide any evidentiary basis to support the findings relied upon by the Examiner. See In re Ahlert, 424 F. 2d 1088, 1091; 165 USPQ 418, 420-21 (CCPA 1970). Appellant respectfully submits that one cannot rely on hindsight in reaching an obviousness determination. It is essential that the decision maker forget what has been taught by the disclosure in the patent application under consideration. The Examiner cannot use piece meal reconstruction that ignores the limitations in the claims to arrive at the claimed invention. See Bausch & Lomb, Inc. v Barnes-Hind/Hydrocurve, Inc., 796 Fed. 2d 443,448, 448-449; 240 USPQ 416, 420 (Fed. Cir.1986). The rejection is clearly based on a conclusory assertions and assumptions not found in the prior art.

(C). Claims 1, 2, 4 and 6-19 are patentably distinct under 35 U.S.C. §

103 (a) as being unpatentable over U.S. Patent No. 6,630,416 as applied under 35 U.S.C. § 102 (f).

As pointed out previously in this brief, the '416 patent is the priority document upon which the '897 EP patent was filed. Accordingly, the disclosure of the '416 patent and the disclosure of the '897 EP patent are essentially identical. Arguments have been presented with respect to the '897 EP patent and why that reference does not constitute a proper basis of rejection under section 103 (a). For the sake of brevity, Appellant will rely upon the arguments previously present with respect to the '897 EP patent and the deficiencies of that reference with respect to the section 103 (a) rejection under the '416 patent.

However, the Appellant will address the issue of the Section 102 (f) issue with regard to this rejection. Section 102 (f) states "he did not himself invent the subject matter sought to be patented". To apply this section it is necessary that the subject matter sought to be patented is disclosed but not claimed in the prior reference. In the rejection under the '897 EP patent and the '416 patent the Examiner has stated that these references do not teach that the secondary layer comprises a mixture of about 20% to about 35% of silica particles, and about 65% to about 80% carbon friction modifying particles. Accordingly, the '416 patent does not disclose the subject matter sought to be patented in the present patent application. A determination that a claim is invalid as anticipated or lacking novelty under 35 U.S.C § 102 requires a finding that "each and every limitation is found either expressly or inherently in a single prior art reference". Oakley, Inc. v.

Sunglass Hut Int'l, 316 F. 3d, 1331, 1339; 65 USPQ 2d 1321, 1325 (Fed. Cir. 2003). There must be no difference between the claimed invention and the reference disclosure, as viewed by a person having ordinary skill in the art. Scripps Clinic & Research Foundation v. GenenTech, Inc., 927 Fed. 2d 1565, 1576; 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). The standards for anticipation have not been met in this rejection as a specific limitation contained in the claims on Appeal is not disclosed in the '416 patent. The deficiency of the '416 patent is acknowledged by the Examiner in the various Office Actions issued by the Examiner. The key elements of the claimed invention must be found in the prior art, and not in Applicant's disclosure. Assumptions about knowledge in the art cannot be substituted for the literal disclosure of the reference.

As previously pointed out in this brief, the Examiner previously rejected the claims on the ground of non-statutory obviousness-type double patenting over the '416 patent. This is another indication that the subject matter contained in the claims on Appeal is not identical to the subject matter disclosed in the '416 patent. A Terminal Disclaimer has been filed and accepted by the Patent and Trademark Office to overcome the non-statutory obviousness-type double patenting rejection previously presented.

It is the Appellant's position that the '416 patent does not disclose the invention defined by the claim on Appeal and that this patent does not meet the standards for prior art under Section 102 (f). In addition, in view of the Terminal Disclaimer it is Appellant's position that the '416 patent can not be properly applied

to reject the claims under Section 103(a).

III. CONCLUSION

Claims 1, 2, 4 and 6-19 are patentably distinct over the combination of references in the recitation of a friction material having a secondary layer comprising a mixture of carbon and silica friction modifying particles on at least one surface of a primary layer wherein the secondary layer comprises about 20% to about 35% silica particles and about 65% to about 80% carbon particles. Neither the '897 EP patent, the '307 patent or the '416 patent disclose or suggest a secondary layer for a friction material having the composition defined by the claims on Appeal. The references applied by the Examiner do not teach a friction material having a secondary layer comprising a mixture of carbon and silica friction modifying particles wherein the secondary layer comprises the specific ranges for these components. The deficiencies of these references have been acknowledged by the Examiner in the various Office Actions issued during the prosecution of this patent application.

In view of the foregoing, Appellants respectfully request that The Board reverse the Examiner's rejections on the prior art applied by the Examiner. Issuance of a patent on this application is respectfully requested.

Respectfully submitted,

EMCH, SCHAFFER, SCHAUB
& PORCELLO CO., L.P.A.



Charles R. Schaub
Reg. No. 27,518

P.O. Box 916
Toledo, Ohio 43697
Ph: (419) 243-1294
Fax (419) 243-8502
CRS/jle

CLAIMS APPENDIX

1. A friction material comprising a fibrous base material impregnated with at least one curable resin, the fibrous base material comprising high fiber content porous primary layer and a secondary layer comprising a mixture of carbon and silica friction modifying particles on at least one surface of the primary layer; the secondary layer comprises about 20% to about 35%, by weight, of silica particles, and about 65% to about 80% carbon particles, based on the total weight of the friction modifying particles.

2. The friction material of claim 1, wherein the secondary layer comprises about 5% to about 15%, by weight, of friction modifying particles, based on the weight of the fibrous base material.

4. The friction material of claim 3 1 wherein the friction modifying particles are present at about 0.2 to about 20%, by weight, based on the weight of the fibrous base material, the friction modifying particles covering about 3% to about 30% of the surface area of the primary layer.

6. The friction material of claim 1, wherein the friction modifying particles have an average size ranging from about 0.5 to about 20 microns.

7. The friction material of claim 3 1, wherein the friction modifying particles comprise a mixture of i) diatomaceous earth particles and ii) fully carbonized carbon particles or partially carbonized particles.

8. The friction material of claim 1, wherein the fibrous base material defines pore diameters ranging in mean average size from about 2.0 to about 25 microns.

9. The friction material of claim 1, wherein the primary layer has readily available air voids of at least about 50%.

10. The friction material of claim 1, wherein the fibrous base material comprises at least one type of aramid fibers, cotton fibers, graphite particles, and, at least one type of filler material.

11. The friction material of claim 10, wherein the aramid fibers have a freeness of about 350 to about 650 on the Canadian Standard Freeness index.

12. The friction material of claim 10, wherein the aramid fibers have average fiber lengths in the range of about 0.5 to about 10mm.

13. The friction material of claim 10, wherein the filler comprises diatomaceous earth.

14. The friction material of claim 10, wherein the fibrous base layer comprises about 50 to about 60%, by weight, aramid fibers; about 40 to about 10%, by weight, cotton fibers; about 5-15%, by weight, carbon fibers; about 20 to about 30%, by weight, graphite particles; and, about 5 to about 15%, by weight, filler material.

15. The friction material of claim 1, impregnated at about 35 to about 40% resin, by weight, with at least one of: a phenolic resin, a modified phenolic resin, or a mixture of a phenolic resin and silicone resin wherein the amount of silicone resin in the mixture ranges from approximately 5 to approximately 80%, by weight, based on the weight of the mixture wherein the phenolic resin is

present in a solvent material and the silicone resin is present in a solvent material which is compatible with the solvent material of the phenolic resin.

16. The friction material of claim 1, wherein the fibrous base material comprises a plurality of less fibrillated aramid fibers having a freeness of at least about 300 on the Canadian Standard Freeness (CSF) index, carbon fibers, graphite particles, and, at least one filler material.

17. The friction material of claim 16, wherein the less fibrillated aramid fibers have a freeness of about 430 to about 650 on the Canadian Standard Freeness index.

18. The friction material of claim 17, wherein the aramid fibers have average fiber lengths in the range of about 0.5 to about 10mm.

19. The friction material of claim 16, wherein the fibrous base layer comprises about 50 to about 60%, by weight, less fibrillated aramid fibers; about 5 to about 20%, by weight, carbon fibers; about 20 to about 30%, by weight, graphite particles; and, about 3 to about 15%, by weight, filler material.

20. A process for producing a friction material comprising:
forming a high fiber content fibrous base material,
coating about 3% to about 30% of at least one surface of the fibrous base material with friction modifying particles comprising a mixture of carbon particles and silica particles, the friction modifying particles being present at about 0.2 to about 20%, by weight, based on the weight of the fibrous base material, and
impregnating the coated fibrous base material with a phenolic resin, phenolic-based or a phenolic-silicone resin mixture, and thereafter curing the impregnated fibrous base material at a predetermined temperature for predetermined period of time.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

No decision has been rendered by a court or the Board in any proceedings in related appeals and interferences.